Claims::

What is claimed is:

1. A valve comprising a member having a stop, the stop providing a first force operative to keep said valve closed, said member being sensitive to an index pressure; and an outlet at a second pressure, said index pressure providing a second force in opposition to said first force when a differential between said second pressure and said index pressure is provided to said member; and opening the valve when said second pressure is sufficiently less than the index pressure to overcome the first force.

2. The valve of claim 1 wherein said valve closes under action of said second pressure when said index pressure provides said second force to said member of a magnitude less than that of said first force.

3. The valve of claim 1 wherein said valve closes under action of said second pressure when said second pressure on said member is substantially equal to said index pressure.

4. The valve of claim 1 and said member including a diaphragm.

5. The valve of claim 1 and said stop being cooperative with an internal opening to selectively control flow of a flowable material.

6. The valve of claim 1 and said index pressure being ambient.

7. The valve of claim 1 wherein said member has a channel therethrough, the channel subject to said index pressure.

8. The valve of claim 1 wherein said stop is further subject to a third force generally equal to and opposite said first force.

9. The valve of claim 1 wherein the valve is in communication with a fluid container having a container pressure, the stop configured such that the stop is subjected to generally equal and opposite forces from the container pressure.

10. The valve of claim 1 wherein the valve is in communication with a fluid container having a container pressure, wherein the stop provides the first force independent of the container pressure.

11. The valve of claim 1 wherein when said valve is closed, the stop is subject to forces placing the stop in a balanced condition.

12. The valve of claim 1 and said stop being generally bobbin-shaped.

13. The valve of claim 1 and said stop comprising a belleville washer.

14. The valve of claim 1 and said stop being generally U-shaped.

15. A valve comprising:

a housing defining a passageway between an outlet opening and an inlet opening, the housing having an internal wall dividing the passageway into a first chamber and a second chamber, the internal wall having an inner opening communicating the first chamber and the second chamber, the housing further having an aperture in communication with the first chamber, the internal wall further having a recessed segment;

a deflectable member connected to the housing at the aperture;

the stop having a first resilient portion and a second resilient portion, the stop positioned in the housing wherein the first resilient portion engages the inner wall around the inner opening and the second resilient portion engages the recessed segment of the inner wall wherein the portions provide generally equal and opposite forces on the stop, the stop being operably associated with the

deflectable member such that when the deflectable member is in the first position, the stop is in sealing contact with the inner opening, and when the deflectable member is in the second position, the stop is spaced from the inner opening.

16. The valve of claim 15 wherein the portions provide generally equal and opposite forces on the stop.

17. The valve of claim 15 wherein the first portion is resilient.

18. The valve of claim 15 wherein the second portion is resilient.

19. The valve of claim 15 wherein the deflectable member has an extension member having a channel and wherein the stop has a stop channel therethrough, the stop channel in communication with the channel of the extension member.

20. The valve of claim 15 wherein the recessed segment has a lip defining a cradle, the second resilient portion positioned within the cradle.

21. The valve of claim 15 wherein the second resilient portion deflects when the deflectable member is in the second position.

22. The valve of claim 15 wherein the stop is generally bobbin-shaped.

23. The valve of claim 15 wherein the outlet opening is defined by a spout of the housing.

24. The valve of claim 15 wherein the housing has a threaded skirt adapted to attach to a fluid container.

25. The valve of claim 15 wherein the first portion and the second portion are resilient.

26. The valve of claim 15 wherein the stop portions provided generally equal and opposite forces when the valve is closed.

27. The valve of claim 15 wherein a chamber is defined between the second resilient portion and the recessed segment.

28. The valve of claim 15 wherein the first portion is sloped.

29. The valve of claim 15 wherein the second portion is sloped.

30. The valve of claim 15 wherein the deflectable member is connected to the stop.

31. A valve comprising:

a housing defining a passageway between an outlet opening and an inner opening, and a member being deflectable from a first position to a second position associated with the housing;

a stop having a first end and second end, the first end and second end positioned in the housing in a first position to place the stop in sealing contact with the inner opening wherein the stop is subject to generally balanced forces between the first end and second end, the stop being operably associated with the deflectable member wherein when the deflectable member is in the first position, the stop is in its first position, and when the deflectable member is in the second position, the stop is spaced from the inner opening.

32. A valve comprising:

a housing adapted to be attached to a fluid container, the housing having an internal wall having an inner opening, the housing having an outlet in communication with the inner opening,

a deflectable member having a central opening in communication with the inner opening, the deflectable member having a bellows extending therefrom and around the central opening, the bellows being connected to the housing at the outlet wherein a passageway is defined from the port member, through the bellows and central opening and through the inner opening;

a stop connected to the deflectable member, the stop positioned within the housing about the inner opening,

wherein when the deflectable member is in a first position, the stop is in sealing contact with the inner opening, and wherein when the deflectable member is in a second position, the stop is spaced from the inner opening.

33. The valve of claim 32 wherein the valve is in communication with a fluid container having a container pressure, the stop configured such that the stop is subjected to generally equal and opposite forces from the container pressure.

34. The valve of claim 32 wherein the valve is in communication with a fluid container having a container pressure, wherein the stop provides the first force independent of the container pressure.

35. The valve of claim 32 wherein when said valve is closed, the stop is subject to forces placing the stop in a balanced condition.

36. The valve of claim 32 wherein the stop has a first end and a second end, the stop being subject to generally balanced forces between the first end and second end.

37. The valve of claim 32 wherein the internal wall has a recessed segment confronting the inner opening.

38. The valve of claim 37 wherein the recessed segment has tapered walls having a pair of side openings in communication with the inner opening.

39. The valve of claim 32 wherein the housing further has a cap member positioned over and connected to the internal wall, the cap member having a port member defining the outlet.

40. The valve of claim 39 wherein the cap has a vent hole.

41. The valve of claim 32 wherein the deflectable member is positioned between the cap and internal wall.

42. The valve of claim 32 wherein the deflectable member has a depending connector having a channel in communication with the central opening.

43. The valve of claim 42 wherein the stop has an opening receiving the connector of the deflectable member.

44. The valve of claim 37 wherein the stop is positioned between the inner wall and the recessed segment.

45. The valve of claim 37 wherein the stop has a first resilient portion positioned about the inner opening and a second resilient portion supported on the recessed segment, the stop having a conduit in communication with a channel of the deflectable member.

46. The valve of claim 32 wherein upon application of a vacuum at the outlet, the deflectable member moves to a second position wherein the stop is spaced from the inner opening to allow a flowable substance to pass through the passageway.

47. The valve of claim 32 wherein the stop has a first resilient portion and a second resilient portion.

48. The valve of claim 47 wherein the first portion is generally planar.

49. The valve of claim 47 wherein the first portion is generally concave when the valve is closed.

50. The valve of claim 32 wherein the deflectable member has a bellows, the bellows connected to the housing.

51. The valve of claim 31 wherein the bellows surrounds a portion of the passageway.

52. A valve comprising:

a housing having a base having a skirt having threads adapted to attach to a fluid container, the base having an internal wall having an inner opening, the internal wall having a recessed segment confronting the inner opening, the recessed segment having tapered walls having a pair of side openings in communication with the inner opening, the housing further having a cap member positioned over and connected to the base, the cap having a central port member in communication with the inner opening, the cap further having a vent hole;

a deflectable member positioned between the cap and internal wall, the deflectable member having a central opening in communication with the inner opening, the deflectable member having a depending connector having a channel in communication with the central opening, the deflectable member having a bellows extending therefrom and around the central opening, the bellows being connected within the port member wherein a passageway is defined from the port member, through the bellows and central opening and through the inner opening and side openings;

a stop having an opening receiving the connector of the deflectable member, the stop positioned between the inner wall and the recessed segment, the stop having a first resilient portion positioned about the inner opening and a second resilient portion supported on the recessed segment, the stop having a conduit in communication with the channel;

wherein when the deflectable member is in a first position, the stop is in sealing contact with the inner opening, and wherein upon application of a vacuum at the port member, the deflectable member moves to a second position wherein the stop is spaced from the inner opening to allow a flowable substance to pass through the passageway.

53. A valve comprising:

a housing defining a passageway between an outlet opening and an inner opening, the housing having a first chamber and a second chamber, the housing further having a port member extending from the first chamber, the housing further having a support member;

a deflectable member associated with said outlet opening and being deflectable from a first position to a second position associated with said housing, said diaphragm member being positioned in said first chamber and responsive to a pressure differential in said first chamber;

a control member operably associated with the diaphragm member and responsive to movement of the diaphragm member between the first position and the second position, and;

a valve member positioned between the port member and the support member and operatively associated with the control member, wherein when the deflectable member is in the first position, said valve member provides a biasing force placing valve member in contact with the inner opening to close the inner opening, and when the deflectable member is in the second position, said deflectable member provides a second force greater than the first force such that control member engages the valve member thereby spacing the valve member from the inner opening, opening the inner opening.

54. The valve of claim 53 wherein the valve member is a bi-stable washer.

55. A valve comprising:

a housing defining a passageway between an outlet opening and an inner opening, the housing having a threaded inner wall adapted to mate with a threaded opening of a container;

a member connected to the housing, the member being deflectable from a first position to a second position;

a stop connected to the member by a bellows assembly, wherein when the member is in the first position, the stop is in sealing contact with the inner opening to close the inner opening, and when the member is in the second position, the bellows assembly flexes wherein the stop is spaced from the inner opening to open the inner opening.

56. The valve of claim 55 wherein the diaphragm is deflectable from the first position to the second position by a partial vacuum applied to the first chamber.

57. The valve of claim 55 wherein the bellows assembly has a first bellows segment connected to the member and a second bellows segment connected to the stop.

58. A valve comprising:

a housing defining a passageway between an outlet opening and an inner opening, the housing adapted to be connected to a fluid container;

a member connected to the housing, the member being deflectable from a first position to a second position;

a stop connected to the member by a bellows assembly, wherein when the member is in the first position, the stop is in sealing contact with the inner opening to close the inner opening, and when the member is in the second position, the bellows assembly flexes wherein the stop is spaced from the inner opening to open the inner opening.

59. The valve of claim 58 wherein the diaphragm is deflectable from the first position to the second position by a partial vacuum applied at the outlet opening.

60. The valve of claim 58 wherein the bellows assembly has a first bellows segment connected to the deflectable member and a second bellows segment connected to the stop.

61. A valve comprising:

a housing defining a passageway between an outlet opening and an inner opening;

a member associated with the housing, the member being deflectable from a first position to a second position; and

a stop hingedly connected to the member, wherein when the deflectable member is in the first position, the stop is in sealing contact with the inner opening to close the inner opening, and when the deflectable member is in the second position, the stop is spaced from the inner opening.

62. The valve of claim 61 wherein the member is biased to the first position.

63. The valve of claim 62 wherein the member is deflectable from the first position to the second position by a partial vacuum applied to the passageway at the outlet opening.

64. A valve comprising:

a housing defining a passageway between an outlet opening and a pair of inner openings, the housing further having an aperture in communication with the passageway, the housing further having a retainer positioned within the passageway;

a diaphragm member having a top surface and a lower surface, the top surface connected to the housing at the aperture, the diaphragm member having a plunger extending from the top surface

and into the passageway, the diaphragm member being movable between a first position and a second position;

a stop assembly having a pair of stop arms, each stop arm having a first segment connected to a lower surface of the diaphragm member and a second segment positioned proximate the respective inner opening;

a biasing member positioned between the retainer and top surface to bias the diaphragm member to the first position, wherein when the diaphragm member is in the first position, the stop arms are in sealing contact with the inner openings, and when the diaphragm member is in the second position, the stop arms are spaced from the inner openings.

65. A valve connected to a container holding a flowable substance under pressure, the valve comprising a member subject to a first force operative to keep said valve closed, the member further having means for balancing forces applied to the member by the pressure in the container, said member being sensitive to an index pressure; and an outlet at a second pressure, said index pressure providing a second force in opposition to said first force when a differential between said second pressure and said index pressure is provided to said member; and opening the valve when said second pressure is sufficiently less than the index pressure to overcome the first force.

66. A valve comprising:

a housing defining a passageway between an outlet opening and an inner opening, and a member being deflectable from a first position to a second position associated with the housing; and

one of a first stop and a second stop operable associated with the deflectable member, each stop having a first portion and second portion, the first end and second end positioned in the housing in a first position to place the stop in sealing contact with the inner opening, wherein when the deflectable member is in the first position, the stop is in its first position, and when the deflectable member is in the second position, the stop is spaced from the inner opening.

67. The valve of claim 66 wherein the first stop is generally symmetrical.

68. The valve of claim 66 wherein the first stop is subject to generally balanced forces between the first end and second end.

69. The valve of claim 66 wherein the first portion and second portion of the first stop have identical operative areas and the first portion and second portion of the second stop have different operative areas.